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TITLE: Collagen-hydrogel for promoting epithelial cell growth and regeneration of the stroma and artificial lens using the same

Brief Summary Text (23):

Also disclosed herein is an artificial lens, which preferably is a contact lens having a predetermined shape and power, which is fabricated from the collagen-hydrogel biomedical material and which is adapted to be affixed to Bowman's membrane of the cornea of an eye. When the artificial lens formed of the collagen-hydrogel for promoting epithelial cell growth is so affixed to the eye, it promotes and supports growth of epithelial cells across the surface thereof to produce corneal epithelium formed of several layers of epithelial cells. In the preferred embodiment, the contact lens comprises a lens body having anterior and posterior surface and formed of a collagen-hydrogel for promoting epithelial cell growth. The hydrogel comprises a hydrogel polymer formed by the free radical polymerization of a hydrophilic monomer solution gelled and crosslinked to form a three dimensional polymeric meshwork anchoring macromolecules. The macromolecules comprise a constituent of a ground substance of tissue interspersed within the polymeric meshwork forming a collagen-hydrogel for promoting epithelial cell growth. The collagen-hydrogel is capable of promoting and supporting growth of corneal epithelium formed of several layers of epithelial cells which implant the artificial lens between Bowman's membrane and corneal epithelium. The lens body is adapted to have the posterior surface thereof positioned over the pupillary zone of the eye, and is affixed to Bowman's membrane in an area substantially equal to the shape of the lens body having corneal epithelium removed therefrom. When the lens body is so affixed, it is capable of supporting and promoting epithelial cell growth enabling corneal epithelium to attach to and cover the anterior surface of the lens body.